IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Art Unit	: 1793	**Customer No. 035811**
Examiner	: Caitlin Anne Fogarty	
Serial No.	: 10/583,220	Docket: JFE-06-1129
Filed	: June 16, 2006	
Inventors	: Atsushi Miyazaki	Conf. No.: 7655
	: Yasushi Kato	
	: Osamu Furukimi	
Title	: FERRITIC Cr-CONTAINED STEEL	
		Dated: March 18, 2009

RESPONSE

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is submitted in Response to the Official Action dated December 23, 2008.

The Applicants note with appreciation the withdrawal of the objection to Claim 4, the two §102 rejections and the rejection of Claim 17 under §103 over Miyazaki.

Claims 13 – 17, 20 and 21 now stand rejected under 35 USC §103 over Kawabata. The Applicants note with appreciation the Examiner's detailed comments hypothetically applying Kawabata against those rejected claims. The Applicants nonetheless respectfully submit that those claims are not obvious over Kawabata. Detailed reasons are set forth below.

Kawabata is directed to the problem of improving corrosion resistance in stainless steel sheets having extremely low amounts of C, S and O. Kawabata was quite successful in that regard. However, Kawabata did not seek or even recognize the issues associated with achieving low thermal expansion coefficients for corrosion-resistant steels in applications in which heat cycles are frequently repeated between high and low temperatures. Thus, the emphasis in Kawabata is quite different from that and the Applicants' activities.

For example, Kawabata teaches the addition of W in an amount of 0.1 – 5 wt% as being effective to improve corrosion resistance. This teaching may be found in column 9, beginning at line 15, for example. The Applicants, on the other hand, discovered that precipitated W in prescribed amounts surprisingly impacts the thermal expansion coefficient. There is nothing in Kawabata that would have lead one skilled in the art to have any appreciation for the impact of W on thermal expansion coefficient, much less a prescribed amount of W precipitate. Kawabata is completely non-enabling in that regard.

There is a reason for this. Kawabata discloses in column 1, at lines 50 to 57, a process for manufacturing stainless steel sheets to be used as building materials, materials for automobiles, materials for chemical plants and the like, in particular, stainless steel sheets having excellent corrosion resistance as compared to conventional steel sheets without trimming the steel sheet surface after annealing-pickling as in the production of the Applicants' stainless steel sheets, particularly stainless steel sheets having extreme-low amounts of C, S and O.

On the other hand, with respect to the Applicants' Claim 13, the Applicants' Specification on page 1, paragraph No. [0001] under the heading, Technical Field, discloses that "The present invention relates to ferritic Cr-contained steel having a low thermal expansion coefficient, and particularly relates to ferritic Cr-contained steel having a low thermal expansion coefficient suitable for applications in which a heat cycle is repeated between high temperature and low temperature, including exhaust system members of an automobile such as exhaust manifolds, exhaust pipes, converter case materials, and metal honeycomb materials; separators within a solid-oxide-type fuel cell; materials for interconnectors; materials for reformers as peripheral members of fuel cells; exhaust ducts of power generation plants; or heat exchangers." Also, the Applicants' Specification on page 13, paragraph No. [0038] describes a feature of Claim 13 in that, to secure the effect of

thermal expansion coefficient, there is described the step of hot-rolled sheet annealing at a hot-rolled sheet annealing temperature of 950 to 1150°C (more preferabley, 1020°C to 1200°C) so that precipitated W is 0.1% or less in percent by mass.

Nonetheless, in Kawabata, the relationship between the amount of precipitated W and thermal expansion coefficient is not described at all. Kawata in column 9, lines 15 to 24 discloses that W may be contained optionally and in all of the Examples in Kawabata, there is only one Example, that is to say No. 86 (W: 1.5%) in Table 4, and the value is different from the range of W content (2.0 to 6.0%) of the Applicants' claims.

Thus, the rejection frankly acknowledges that Kawabata does not disclose the claimed precipitated W in an amount of 0.1 mass % or less or that the average thermal expansion coefficient between 20°C and 800°C is less than about $12.6x10^{-6}$/°C. However, the rejection relies on inherency of these two claimed features based on overlap in the composition of the steels of Kawabata with those claimed as well as the steels of Kawabata being made "using a method similar to the method of the instant invention."

The requirement for utilizing inherency in rejecting claims is quite high. Specifically, the MPEP and a long line of case law requires that the characteristic at issue, in this case the amount of precipitated W and the average thermal expansion coefficient, must "necessarily" be present in the prior art. It is not enough that the claimed characteristic might be present or even likely be present. The standard for inherency is quite high --- the claimed physical characteristic must "necessarily" be present in the prior art.

The Applicants respectfully submit that Kawabata does not meet this standard. This is because there is a significant difference in the methodology employed by the Applicants versus that employed by Kawabata. Although the Applicants agree that Kawabata discloses cold-rolling and

subjecting a cold-rolled sheet to annealing at 1150°C as recited in the Applicants' Claim 13, this disclosure is insufficient to establish that the Applicants' claimed amount of precipitated W and thermal expansion coefficient would "necessarily" be present.

Referring specifically to cols. 13 and 14 as helpfully noted in the rejection, Kawabata specifically teaches:

> Then, the cold rolled sheets No. 1-32, 66, 68, 70, 72-74 are subjected to an annealing in which they are heated at 1150° C. in a butane gas burning atmosphere for 10 seconds and cooled in air to room temperature.

This portion of Kawabata at the bottom of column 14 confirms the point raised in the rejection that Kawabata discloses annealing subsequent to cold-rolling at 1150°C as noted above. However, there is an important difference between the Kawabata process as disclosed in column 14 and what the Applicants do. Specifically, Kawabata discusses annealing for ten seconds. This is sharply contrasted to the Applicants' process as illustrated in the Applicants' Substitute Specification on page 13 in paragraph [0038] wherein finish annealing was applied at a variety of temperatures measured in minutes, not seconds. This is important. Those skilled in the art are well aware that finish annealing achieves its goals by controlling various annealing conditions including temperature, atmospheric composition, dew point and the time of annealing. Various of these factors, such as temperature and time, are particularly important given the thickness of the steel sheets to be annealed. In this context, both Kawabata and the Applicants' steel sheets are thin sheets and the impact of annealing based on a ten second exposure versus a three minute exposure can be profound. This is particularly true given the importance not only of the overall quantity of W present in the steel sheet, but the precipitation of at least portions of the total amount of W.

The Applicants respectfully submit that this important difference between the methodology of Kawabata and the Applicants' methodology raises serious questions as to whether the steels of Kawabata would exhibit the Applicants' claimed amount of precipitated W and average thermal expansion coefficient. In fact, the Applicants respectfully submit that one skilled in the art could have a reasonable expectation that not only is the claimed amount of precipitated W and average thermal expansion coefficient not "necessarily" the same, but could be quite different indeed. Thus, the Applicants respectfully submit that it would be nothing more than unsupported speculation to take the position that the amount of precipitated W and the average thermal expansion coefficient recited in the Applicants' claims would "necessarily" be present or inherent in the steels of Kawabata. This difference in methodology and its potential impact on the claimed physical characteristics at issue prevent the application of inherency of those physical characteristics against the Applicants' claims since the Applicants have demonstrated that the claimed physical characteristics are not "necessarily" present in Kawabata. Therefore, the disclosure of Kawabata cannot meet the strict requirement for inherency. Withdrawal of the rejection is respectfully requested.

Claims 13 – 17, 20 and 21 stand provisionally rejected to on the ground of non-statutory obviousness-type double patenting over Claims 1 – 8, 10 – 14 and 16 of co-pending application No. 10/512,782 in view of Kawabata. The Applicants respectfully submit that inasmuch as this rejection is provisional, the issue of double patenting can be addressed in the other co-pending application. In other words, this application can be passed to allowance and, if appropriate, a double-patenting rejection can be applied in the other application. This is in accordance with well known procedure in the MPEP. Withdrawal of the rejection is therefore respectfully requested.

In light of the foregoing, the Applicants respectfully submit that the entire application is now in condition for allowance, which is respectfully requested.

Respectfully submitted,

T. Daniel Christenbury
Reg. No. 31,750
Attorney for Applicants

TDC/sh
(215) 656-3381